UNITED STATES PATENT AND TRADEMARK OFFICE

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-16* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1 and 3-16 are pending for examination.

2.   The specification is objected to as failing to provide proper antecedent

basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP

§ 608.01(o). Correction of the following is required: the computer-readable

recording medium as recited in claim 16 is not disclosed in the specification.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

4.   Claims 1, 3-14 are rejected under 35 U.S.C. 101 because the claimed

invention is directed to non-statutory subject matter.

5.   For example, claims 1 and 9 recited an apparatus comprising a plurality of

units (i.e. assigning unit, time slot switching unit, task selecting unit, generating

unit, control unit), according to the specification paragraph [0047] the plurality of

units are software modules. An apparatus that contains only software modules

without claiming any associated hardware required to execute are software per

se. Unfortunately, software alone is directed to a nonstatutory subject matter.

Therefore, claims 1, 3-14 are directed to a nonstatutory subject matter.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7.   Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

8.   As per claim 16, applicant claimed "a computer-readable recording medium for causing a computer to perform a method for switching execution of a task assigned to a time slot by switching time slots in a processor". However, there is no where in applicant specification disclosed "a computer-readable recording medium for causing a computer to perform a method for switching execution of a task assigned to a time slot by switching time slots in a processor". Therefore, claim 16 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

10.   Claims 1, 3-5, and 15-16 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Akiyama et al. (hereafter Akiyama) (U.S. Patent No. 6430594),

and in view of Anderson et al. (hereafter Anderson) (U.S. Patent No. 5628013).

11.   As per claim 1, Akiyama teaches the invention substantially as claim

including a task switching apparatus for switching execution of a task assigned to

a time slot by switching time slots in a processor (abstract), comprising:

        a time slot switching unit operable to switch time slots when an execution

time of a task reaches an assignment time (figs. 1, 10; col. 6, lines 15-50);

        a task selecting unit operable to select a first task from the plurality of first

tasks assigned to the first time slots when said time slot switching unit switches a

current time slot to a time slot other than the second time slot, and to select at

least one second task from the plurality of second tasks assigned to the second

time slot when the current time slot is witched to the second time slot (col. 3,

lines 54-65; col. 5, lines 15-60; col. 6, lines 14-63); and

        wherein the at least one second task has a priority classification, and said

task selecting unit is operable to select the at least one second task from among

the plurality of second tasks according to the priority classification (col. 8, lines

24-50).

12.   Akiyama did not specifically teaches unit operable to assign, on a one to

one basis, each of a plurality of first tasks to first time slots among a plurality of

time slots within a period, and assign a plurality of second tasks different from the

plurality of first tasks to a single second time slot among the plurality of time slots

within the period.

13.   However, Anderson teaches unit operable to assign, on a one to one

basis, each of a plurality of first tasks to first time slots among a plurality of time

slots within a period, and assign a plurality of second tasks different from the

plurality of first tasks to a single second time slot among the plurality of time slots

within the period (abstract; col. 2, lines 64-67; col. 3, lines 9-13, 20-47; col. 6,

lines 19-63).

14.   It would have been obvious to one of an ordinary skill in the art at the time

the invention was made to try to incorporate the teaching of to assign, on a one

to one basis, each of a plurality of first tasks to first time slots among a plurality of

time slots within a period, and assign a plurality of second tasks different from the

plurality of first tasks to a single second time slot among the plurality of time slots

within the period as disclosed in Anderson's system into Akiyama's stem to

produce a system that controlling execution time in the system so that real-time

tasks from a different applications can be dynamically scheduled without conflicts

on the system as suggested in Anderson (col. 1, lines 9-13).

15.   As per claim 3, Akiyama did not specifically teach that wherein said

assigning unit is operable to determine a time of the second time slot which is a

residual time obtained by subtracting a total time of time slots to which the

plurality of first tasks are assigned from a time of a predetermined period.

16.   However, Anderson teaches that wherein said assigning unit is operable

to determine a time of the second time slot which is a residual time obtained by

subtracting a total time of time slots to which the plurality of first tasks are

assigned from a time of a predetermined period (col. 3, lines 19-47).

17.   It would have been obvious to one of an ordinary skill in the art at the time

the invention was made to try to incorporate the teaching of determine a time of

the second time slot which is a residual time obtained by subtracting a total time

of time slots to which the plurality of first tasks are assigned from a time of a

predetermined period as disclosed in Anderson's system into Akiyama's stem to

produce a system that controlling execution time in the system so that real-time

tasks from a different applications can be dynamically scheduled without conflicts

on the system as suggested in Anderson (col. 1, lines 9-13).

18.   As per claim 4, Akiyama did not specifically teach that wherein said assigning unit is operable to recalculate the residual time so as to determine the residual time as the time of the second time slot every time said assigning unit assigns a new first task to a time slot.

19.   However, Anderson teaches that wherein said assigning unit is operable to recalculate the residual time so as to determine the residual time as the time of the second time slot every time said assigning unit assigns a new first task to a time slot (col. 3, lines 38-47).

20.   It would have been obvious to one of an ordinary skill in the art at the time the invention was made to try to incorporate the teaching of recalculate the residual time so as to determine the residual time as the time of the second time slot every time said assigning unit assigns a new first task to a time slot as disclosed in Anderson's system into Akiyama's stem to produce a system that controlling execution time in the system so that real-time tasks from a different applications can be dynamically scheduled without conflicts on the system as suggested in Anderson (col. 1, lines 9-13).

21.   As per claim 5, Akiyama did not specifically teach wherein the first task is a task including a specification of an assignment time, and said assigning unit, when trying to add a new first task, in the case where the total sum of the total assignment times of already-assigned tasks and an assignment time of a new

first task exceeds a time period refuses to assign a first time slot to the new first

task.

22.   However, Anderson teaches wherein the first task is a task including a

specification of an assignment time, and said assigning unit, when trying to add a

new first task, in the case where the total sum of the total assignment times of

already-assigned tasks and an assignment time of a new first task exceeds a

time period refuses to assign a first time slot to the new first task (abstract; col. 3,

lines 20-50).

23.   It would have been obvious to one of an ordinary skill in the art at the time

the invention was made to try to incorporate the teaching of the first task is a task

including a specification of an assignment time, and said assigning unit, when

trying to add a new first task, in the case where the total sum of the total

assignment times of already-assigned tasks and an assignment time of a new

first task exceeds a time period refuses to assign a first time slot to the new first

task as disclosed in Anderson's system into Akiyama's stem to produce a system

that controlling execution time in the system so that real-time tasks from a

different applications can be dynamically scheduled without conflicts on the

system as suggested in Anderson (col. 1, lines 9-13).

24.   As per claims 15-16, they are method and computer readable recording medium claims that corresponding to system claim 1. Therefore, they are rejected for the same reason as claim 1 above.

25.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. (hereafter Akiyama) (U.S. Patent No. 6430594), in view of Anderson et al. (hereafter Anderson) (U.S. Patent No. 5628013), as applied to claim 1 above, and further in view of Goldick (US 2003/0093457).

26.   Goldick was cited in the previous office action.

27.   As per Claim 6, Akiyama and Anderson teaches the invention substantially as claimed in claim 1 above. Akiyama and Anderson did not specifically teach a storing unit capable to store lock information showing whether a resource capable of being accessed by a tasks is in a lock state because of access by any tasks or not, and a changing unit operable to change a state of a task from an executable state to a waiting state when the task under execution is trying to access a resource in a lock state and change a state of the task from a waiting state to an executable state when the resource is unlocked, and wherein the task selecting unit eliminates a task in a waiting state from selecting targets.

28.   However, Goldick disclose an apparatus that storing unit capable to store lock information showing whether a resource capable of being accessed by a

tasks is in a lock state because of access by any tasks or not (paragraph [0012]), and a changing unit operable to change a state of a task from an executable state to a waiting state when the task under execution is trying to access a resource in a lock state and change a state of the task from a waiting state to an executable state when the resource is unlocked, and wherein the task selecting unit eliminates a task in a waiting state from selecting targets (paragraphs [0020], [0084]).

29.   It would have been obvious to one of an ordinary skill in the art at the time the invention was made to try to incorporate the teaching of Goldick storing unit and changing unit into Akiyama and Anderson's system to produce a system that storing lock information since it is common in multi-tasking systems to have a tasks request a resource that is locked and instead of spinning on that tasks to place the task in a queue until the lock is free and then reactivating the waiting task.

30.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. (hereafter Akiyama) (U.S. Patent No. 6430594), in view of Anderson et al. (hereafter Anderson) (U.S. Patent No. 5628013), and in view of Goldick (US 2003/0093457), as applied to claim 6 above, and further in view of Hoogerbrugge (US 2006/0069738).

31.   Goldick and Hoogerbrugge were cited in the previous office action.

32.   As per claim 7, Akiyama, Anderson, and Goldick teach the claimed

invention substantially as claimed in claim 6. Akiyama, Anderson, and Goldick

did not specifically teach a shifting unit operable to shift the processor to a

power-saving state when no tasks is included in first type and second type tasks.

33.   However, Hoogerbrugge a shifting unit operable to shift the processor to a

power-saving state when no tasks is included in first type and second type tasks

(abstract, lines 8-19).

34.   It would have been obvious to one of an ordinary skill in the art at the time

the invention was made to try to incorporate the teaching of a shifting unit

operable to shift the processor to a power-saving state when no tasks is included

in first type and second type tasks as disclosed in Hoogerbrugge into Akiyama,

Anderson, and Goldick's system to produce a system that capable of switch to a

power-saving mode when the processor is not being used to thereby saving on

the overall drain on the system therefore freeing more resources for other

computing functions.

35.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Akiyama et al. (hereafter Akiyama) (U.S. Patent No. 6430594), in view of

Anderson et al. (hereafter Anderson) (U.S. Patent No. 5628013), as applied to

claim 1 above, and further in view of D'Souza (US 6,052,707).

36.   D'Souza was cited in the previous office action.

37.   As per claim 8, Akiyama and Anderson teach the claimed invention

substantially as claimed in claim 1 above. Akiyama and Anderson did not

specifically teach a switching unit operable to prepare one of the register sets for

using it for a task under execution, and return the context of a task to be

completed next to another register set using background processing and switch

register sets when switching time slots.

38.   However D'Souza teaches a switching unit operable to prepare one of the

register sets for using it for a task under execution, and return the context of a

task to be completed next to another register set using background processing

and switch register sets when switching time slots (column 6, lines 16-35).

39.   It would have been obvious to one an ordinary skill in the art at the time

the invention was made to try to incorporate the teaching of D'Souza's switching

unit into Akiyama and Anderson's system to produce a system that capable of

maintaining the contexts of tasks during task switching.

Response to Arguments

40.   Applicant's arguments with respect to claims 1 and 3-16 have been

considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

41.   Claims 9-14 would be allowable if rewritten or amended to overcome the

rejection(s) under 35 U.S.C. 101, set forth in this Office action.

Conclusion

42.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure (see attached PTO 892 form for details).

43.   Applicant's amendment necessitated the new ground(s) of rejection

presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as

set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire

THREE MONTHS from the mailing date of this action. In the event a first reply is

filed within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

44.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to JENNIFER N. TO whose telephone number is

(571)272-7212. The examiner can normally be reached on M-T 6AM- 3:30 PM,

F 6AM- 2:30 PM.

45.   If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax

phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

46.   Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

for published applications may be obtained from either Private PAIR or Public

PAIR. Status information for unpublished applications is available through

Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free). If you would like assistance from a USPTO Customer Service

Representative or access to the automated information system, call 800-786-

9199 (IN USA OR CANADA) or 571-272-1000.

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